

IN THE CLAIMS:

Please cancel Claims 4 and 15 without prejudice to or disclaimer of the subject matter recited therein.

Please amend Claims 1, 5, 12, 16, and 23-28 as follows.

1. (Currently Amended) An image processing apparatus for producing a virtual space for walk-through, said apparatus comprising:

holding means for holding plural pieces of frame data constituting [[a]] each of plural moving images captured using [[a]] each of a plurality of capture devices mounted on a moving object, associated with position data obtained based on GPS, that indicate a position at which each piece of frame data is captured;

extraction means for reading position data associated with successive frame data and extracting successive frame data whose position data which nearly match; matches, from said plural pieces of frame data held by said holding means;

deletion means for deleting, from frame data corresponding to each of the plurality of capturing devices, held in said holding means, all frame data corresponding to the extracted position data except for one position data; of the extracted successive frame data except for one frame data; and

generation means for generating panoramic images from the frame data captured by the plurality of capturing devices; and

associating means for associating each of the frame data that has not been deleted
~~by said deletion means~~ panoramic images with a position on a map based on the position
data of ~~said frame data~~ frames constituting that panoramic image.

2-4. (Cancelled)

5. (Currently Amended) The apparatus according to claim 1, further comprising:
setting means for setting sampling intervals of frame data,
wherein said extraction means extracts ~~frame data of frames having~~ position data
that is separated by a distance that is shorter than a distance corresponding to the sampling
intervals set by said setting means.

6-11. (Cancelled)

12. (Currently Amended) An image processing method for producing a virtual
space for walk-through, said method comprising the steps of:

~~extracting successive frame data, determined to have been captured at~~
~~substantially a same position, obtained from holding means which holds~~ holding in a
holding means plural pieces of frame data constituting ~~[[a]]~~ each of plural moving images
captured using ~~[[a]]~~ each of a plurality of capture devices mounted on a moving object,
wherein said holding means stores each of the plural pieces of frame data associated with
position data obtained based on GPS, that indicate a position at which each piece of frame

data is captured; ~~and said extraction step extracts successive frame data matching in position data;~~

reading position data associated with successive frame data and extracting position data which nearly match;

deleting, from frame data corresponding to each of the plurality of capturing devices, held in the holding means, all frame data corresponding to the extracted position data except for one position data; ~~of the extracted successive frame data except for one frame data; and~~

generating panoramic images from the frame data captured by the plurality of capturing devices; and

associating each of the panoramic images ~~the frame data that has not been deleted by said deletion step with a position on a map based on the position data of said frame data frames constituting that panoramic image.~~

13-15. (Cancelled)

16. (Currently Amended) The method according to claim 12, further comprising the step of:

setting sampling intervals of frame data,

wherein said extracting step extracts ~~frame data for frames having~~ position data that is separated by a distance that is shorter than a distance corresponding to the sampling intervals set in said setting step.

17-22. (Cancelled)

23. (Currently Amended) A computer-executable program, stored on a computer readable medium, which makes a computer execute an image processing apparatus for producing a virtual space for walk-through, comprising:

code for reading position data associated with successive frame data and extracting position data which nearly match, ~~extracting successive frame data, having position data that nearly matches,~~ from holding means which holds plural pieces of frame data constituting ~~[[a]]~~ each of plural moving images captured using ~~[[a]]~~ each of a plurality of capture devices mounted on a moving object, associated with position data obtained based on GPS, that indicate a position at which each piece of frame data is captured;

code for deleting, from frame data corresponding to each of the plurality of capturing devices, held in the holding means, all frame data corresponding to the extracted position data except for one position data; ~~of the extracted successive frame data except for one frame data;~~ and

code for generating panoramic images from the frame data captured by the plurality of capturing devices; and

code for associating each of the panoramic images ~~the frame data that has not been deleted by said code for deleting~~ with a position on a map based on the position data of said ~~frame data~~ frames constituting that panoramic image.

24. (Currently Amended) A storage medium storing a computer-executable program which makes a computer execute an image processing apparatus for producing a virtual space for walk-through, wherein said program comprises:

a code of a reading step of reading position data associated with successive frame data and of an extracting step of extracting position data which nearly match, ~~an extracting step of extracting successive frame data, having position data that nearly matches,~~ from holding means which holds plural pieces of frame data constituting each of a plurality of moving images captured by using [[a]] each of a plurality of capture devices mounted on a moving object, associated with position data obtained based on GPS, that indicate a position at which each piece of frame data is captured;

a code of a deleting step of deleting, from frame data corresponding to each of the plurality of capturing devices, held in the holding means, all frame data corresponding to the extracted position data except for one position data; ~~of the extracted successive frame data except for one frame data;~~ and

a code for a generating step of generating panoramic images from the frame data captured by the plurality of capturing devices; and

a code of an associating step of associating each of the panoramic images ~~the frame data that has not been deleted by said deletion step~~ with a position on a map based on the position data of ~~said frame data~~ frames constituting that panoramic image.

25. (Currently Amended) An image processing apparatus for producing a virtual space for walk-through, said apparatus comprising:

holding means for holding plural pieces of frame data constituting a moving image, obtained from image data input while visiting a plurality of positions;

determination means for comparing two pieces of successive frame data and determining whether the two pieces of successive frame data have been captured at a same position;

extraction means for extracting frame data determined by said determination means to have been captured at the same position from said plural pieces of frame data held by said holding means;

deletion means for deleting frame data overlapping another piece of frame data extracted by said extraction means; and

storage means for storing, after associating with a position on a map, frame data remaining after a deleting process performed by said deletion means,

wherein said determination means computes least squares error between two pieces of successive frame data, and determines that the two pieces of successive frame data match each other when the computed least squares error is equal to or smaller than a predetermined value, so that said deletion means deletes overlapped frame data.

26. (Currently Amended) An image processing method for producing a virtual space for walk-through, said method comprising the steps of:

comparing two pieces of successive frame data obtained from holding means which holds plural pieces of frame data constituting a moving image, obtained from image data captured at a plurality of positions, and determining whether or not the two pieces of successive frame data have been captured at a same position,

extracting frame data determined in said determining step to have been captured at the same position;

deleting frame data overlapping another piece of frame data extracted in an extracting step; and

storing frame data remaining after said deleting step, after associating the frame data remaining after said deletion step with a position on a map,

wherein said determining step computes least squares error between two pieces of successive frame data, and determines that the two pieces of successive frame data match each other when the computed least squares error is equal to or smaller than a predetermined value, so that said deleting step deletes overlapped frame data.

27. (Currently Amended) A computer-executable program, stored on a computer readable medium, which makes a computer execute an image processing apparatus for producing a virtual space for walk-through, comprising:

code for comparing two pieces of successive frame data obtained from holding means which holds plural pieces of frame data constituting a moving image, obtained from

image data captured at a plurality of positions, and determining whether the two pieces of successive frame data have been captured at a same position;

code for extracting frame data determined in said determining step to have been captured at the same position;

code for deleting frame data overlapping another piece of frame data extracted in an extracting step; and

code for storing frame data remaining after said deleting step, after associating the frame data remaining after said deleting step with a position on a map,

wherein said determining step computes least squares error between two pieces of successive frame data, and determines that the two pieces of successive frame data match each other when the computed least squares error is equal to or smaller than a predetermined value, so that said deleting step deletes overlapped frame data.

28. (Currently Amended) A storage medium storing a computer-executable program which makes a computer execute an image processing apparatus for producing a virtual space for walk-through, wherein the program comprises:

code for comparing two pieces of successive frame data obtained from holding means which holds plural pieces of frame data constituting a moving image, obtained from image data captured at a plurality of positions, and determining whether or not the two pieces of successive frame data have been captured at a same position;

code for extracting frame data determined in said determining step to have been captured at the same position;

code for deleting frame data overlapping another piece of frame data extracted in an extracting step; and

code for storing frame data remaining after said deleting step, after associating the frame data remaining after said deleting step with a position on a map,

wherein said determining step computes least squares error between two pieces of successive frame data, and determines that the two pieces of successive frame data match each other when the computed least squares error is equal to or smaller than a predetermined value, so that said deleting step deletes overlapped frame data.

29-30. (Cancelled)